

# West Nile Virus (WNV) in Massachusetts

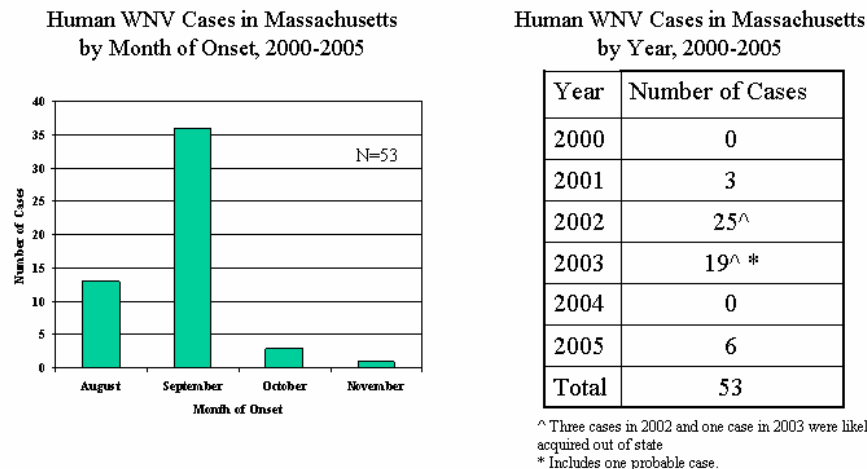
## An Update for Health Care Providers

Massachusetts Department of Public Health (MDPH)  
Division of Epidemiology and Immunization

### **Background**

West Nile virus (WNV) is a flavivirus first isolated in 1937 from a resident of the West Nile district of Uganda. It was first identified in the United States in 1999 and is now found in most parts of the country, including Massachusetts.

The virus is maintained in a bird-mosquito cycle with humans considered incidental hosts. The time of highest risk for human infection with WNV in Massachusetts is generally early August through late October. The frequency and severity of clinical illness increases as age increases.



While the majority of human infections with WNV has resulted from mosquito bites, other rare modes of transmission have been identified, including blood transfusion and organ transplantation from infected donors, occupational sharps injury exposures, transplacental transmission, and probable transmission via breast milk.

### **When to Suspect WNV**

The incubation period for WNV infection ranges from 3 to 14 days. While most WNV infections are asymptomatic, 20% of those infected may experience a non-localized, self-limited illnesses with headache, myalgias, and arthralgias, which is sometimes accompanied by skin rash or lymphadenopathy. Approximately 1% of those infected experience a more severe illness with central nervous system (CNS) involvement. When the CNS is affected, clinical syndromes include aseptic meningitis, encephalitis, and myelitis, which are clinically indistinguishable from similar syndromes caused by other viruses. Meningitis is usually characterized by fever, headache, stiff neck and pleocytosis in cerebrospinal fluid. Encephalitis is usually characterized by fever, headache and altered mental status ranging from confusion to coma, with or without additional signs of brain dysfunction. Less common neurological syndromes can include cranial and peripheral neuritis or other neuropathies, including acute flaccid paralysis syndrome. **Any suspect case of encephalitis or meningitis should be reported as soon as possible to the MDPH, Division of Epidemiology and Immunization, at 1-617-983-6800 or 1-888-658-2850.**

### **How and Where to Send Specimens for Testing**

To assist in confirming suspect cases of neuroinvasive WNV, it is vital that appropriate samples be sent to the MDPH State Laboratory Institute (SLI) for testing. SLI provides diagnostic serologic (IgM and IgG) testing. Acute and convalescent (at least 10 days post-onset) sera may be necessary to confirm the diagnosis. The laboratory will also accept cerebrospinal fluid (CSF) and brain tissue specimens for viral isolation. Specimens must be kept cold on wet ice (+ 4 degrees Centigrade) prior to and during transport. In addition, CSF will be tested for the presence of antibody to WNV virus. All specimens must be accompanied by a completed Universal Specimen Submission Form, available on the MDPH arbovirus website at [www.mass.gov/dph/wnv/wnv1.htm](http://www.mass.gov/dph/wnv/wnv1.htm). **For further questions on WNV specimen submission to SLI, please call the Viral Serology Laboratory at 617-983-6396.**

### **Prevention Messages for Patients**

There is no available human vaccine against WNV infection. Patients should be counseled to take the following precautions if they live in or visit an area with mosquitoes:

- Avoid outdoor activities between dusk and dawn, if possible, as this is the time of greatest mosquito activity.
- Wear a long-sleeved shirt and long pants and take special care to cover up the arms and legs of children when outside during high-risk times or in high-risk areas.
- Fix any holes in screens and make sure they are tightly attached to all doors and windows.
- Use a repellent containing DEET (N,N-diethyl-m-toluamide) or picaridin (KBR 3023). Oil of lemon eucalyptus [p-menthane 3,8-diol (PMD)] has been found to provide protection similar to repellents with low concentrations of DEET. In addition, products that contain permethrin are recommended for use only on clothing, shoes, bed nets, and camping gear. Note that the label for products containing oil of lemon eucalyptus specifies that they should not to be used on children under the age of three years. Also, the American Academy of Pediatrics does not recommend any repellent use on children younger than two months of age. Additional precautions recommended for insect repellent use are detailed on the MDPH WNV Public Health Fact Sheet available at: [www.mass.gov/dph/cdc/factsheets/fswnv.pdf](http://www.mass.gov/dph/cdc/factsheets/fswnv.pdf)

In addition to personal protection, individuals should be counseled to take steps to reduce mosquito populations around their home and neighborhood by getting rid of any standing water that is available for mosquito breeding. Mosquitoes will begin to breed in any puddle or standing water that lasts for more than four days. Homeowners should dispose of or regularly empty any metal cans, plastic containers, ceramic pots, and other water holding containers (including trash cans) on their property.

### **Further Information**

Visit the MDPH arbovirus website at [www.mass.gov/dph/wnv/wnv1.htm](http://www.mass.gov/dph/wnv/wnv1.htm) for further information on WNV and Eastern equine encephalitis (EEE). You may also access current reports of WNV or EEE virus positive birds, mosquito pools, horses and humans in Massachusetts.

Visit the Centers for Disease Control and Prevention website at [www.cdc.gov](http://www.cdc.gov) for additional WNV or EEE educational information and national surveillance statistics.